



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,548	07/08/2003	Ammar Derraa	3848.5US (98-1009.05/US)	9067
24247	7590	03/09/2004	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			NGUYEN, TUAN H	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/615,548	<b>Applicant(s)</b> DERRAA, AMMAR	
	<b>Examiner</b> Tuan H. Nguyen	<b>Art Unit</b> 2813	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/4/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear as to when and where the electrically conductive defect that extends through the dielectric layer, is formed.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 6-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Tjaden et al.(cited by applicant).

See Tjaden et al., figs. 3-11 and text on col. 5-6 which discloses the claimed method for fabricating a field emission structure comprising forming a dielectric layer 26 at least partially around at least one emitter tip 22 (figs. 3); depositing a mask 16 comprising a material which is removable with selectivity over a material of the dielectric layer 26 (fig. 4, col. 5 last paragraph), at least one aperture of the mask 16 being located substantially over the at least one emitter tip 22 (fig. 9); removing (portion) of the mask 16 (fig. 6); forming another dielectric layer 28 adjacent to the dielectric layer 26 (fig. 7); forming a conductive layer 14 adjacent to the another dielectric layer 28 (fig. 8); removing portion of the dielectric layer 26 that are laterally adjacent to the at least one emitter tip through the at least one aperture; and exposing the at least one emitter tip through the another dielectric layer 28 and the conductive layer 14 (fig. 10).

With respect to claim 2, fig. 10 and paragraph bridging col. 5-6 shows the dielectric layer 26 having a thickness which is less than a height of the at least one emitter tip 22.

With respect to claim 3, see col. 6, second paragraph for the mask material comprises of at least one of polysilicon, chromium or molybdenum.

With respect to claim 4, see fig. 9 and text on col. 6, next to the last paragraph for the step of planarizing the mask material 16.

With respect to claim 6, fig. 10 and col. 7, second paragraph show the step of removing portions of the dielectric layer 26 by exposing the portions to etchant.

With respect to claim 7, fig. 8 shows another dielectric layer 28 having a surface which is substantially coplanar with apex of the at least one emitter tip 22.

With respect to claim 5, figs 8-9 show the step of planarizing the structure which removes at least a portion of at least one electrically conductive defect that presumingly extends through the dielectric layer 26 and into the layer comprising mask material 16 at the top

With respect to claim 8, fig. 7 shows another dielectric layer 28 covers the dielectric layer 26 presumingly having electrically conductive imperfections or defects as known in the art.

With respect to claims 9-12, figs. 9-10 show the step of exposing comprises forming at least one aperture through the conductive layer 14 in alignment with the at least one emitter tip 22 by planarizing (fig. 9), and removing portions of the another dielectric layer 28 that are laterally adjacent to the at least one emitter tip through the at least one aperture by selectively etching without substantially removing remaining portions of the conductive layer 14 (fig. 10).

Claims 1, 2, 6, 7, 8, 11, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamoto et al. (cited by applicant).

See Nakamoto et al., figs. 1(a)-1(j) and related text on col. 3-5 which discloses the claimed method for forming a field emission structure including the steps of forming a dielectric layer 13 having a thickness which is less than a height of the emitter tip 18, at least partially around at least one emitter tip 18 (fig. 1(d)); forming a mask 20 comprising a material which is removable with selectivity over a material of the dielectric

Art Unit: 2813

layer 13, at least one aperture of the mask being located substantially over the at least one emitter tip 18 ( figs. 1(e)-1(g), col. 4, last two paragraphs); removing portions of the dielectric layer 13 that are laterally adjacent to the at least one emitter tip 18 through the at least one aperture by etching; and removing the mask 20 (fig. 1(h), col. 5, second paragraph); forming another dielectric layer 21 adjacent to the dielectric layer 13 having a surface substantially coplanar with an apex of the emitter tip 18; and forming a conductive layer 22 adjacent to the another dielectric layer 21 (fig. 1(i), col. 5, third paragraph); and exposing the at least one emitter tip 18 through the another dielectric layer 21 and the conductive layer 22 by etching without substantially removing remaining portions of the conductive layer 22 (fig. 1(j), col. 5, fourth paragraph).

With respect to claim 8, fig. 1(i) shows another dielectric layer 21 covers the dielectric layer 13 presumingly having electrically conductive imperfections or defects as known in the art.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-47 of U.S. Patent No. 6,197,607 (cited by applicant). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims 1-12 read on the claims 1-47 of the patent'607, they are both directed to a method for forming a field emission structure including the steps of forming a (first) dielectric layer over at least one emitter tip; forming and planarizing a second layer to expose a portion of the first layer above the emitter tip; removing portions of the dielectric layer exposed through the second layer and adjacent the emitter tip (using the second layer as a mask); removing the second layer; forming another dielectric layer (third layer) over the (first) dielectric layer; forming a (fourth) layer of conductive material over another dielectric layer (third layer); exposing the emitter tip through the another dielectric layer (third layer) and the conductive layer (fourth layer). See claim 1 of the patent'607.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Greene et al., and Alwan et al. are cited as of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 571-272-1694. The examiner can normally be reached on 9AM-5:30PM.

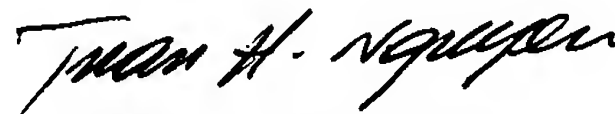
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone



Art Unit: 2813

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan H. Nguyen  
Primary Examiner  
Art Unit 2813